New Host Records of *Capillaria hepatica* in Florida

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The parasitic nematode *Capillaria hepatica* (Bancroft, 1893), a member of the family Trichiuridae, typically occurs in the adult stage in the liver of mammals. It has previously been recorded in Florida from the cotton rat, *Sigmodon hispidus*; cotton mouse, *Peromyscus gossypinus*; and Florida mouse, *Peromyscus floridanus* (Layne and Griffo, 1961; Layne, 1968). This paper reports the occurrence of this parasite in two additional Florida mammals, the cottontail rabbit (*Sylvilagus floridanus*) and roof rat (*Rattus rattus*) and gives information on its incidence in different hosts and habitats on the Archbold Biological Station in southern Florida.

Capillaria hepatica has previously been recorded from *Sylvilagus floridanus* in Oklahoma by Ward (1934), but there appears to be no well substantiated earlier record of *Rattus rattus* as a host in the United States. Hall (1916) listed *Rattus rattus* as one of the hosts of *C. hepatica* but did not distinguish between this species and *Rattus norvegicus* in the U.S. records cited.

One (5.8 per cent) of 17 *Sylvilagus floridanus* examined from various localities and habitats in Polk and Highlands Counties was infected with *C. hepatica*. This specimen was collected on 14 July 1969 in scrubby flatwoods habitat 12 miles S of Lake Placid, Highlands Co. Only a few scattered lesions were visible in the liver. No *C. hepatica* infections were recorded in 12 cottontails examined from four habitat types in an earlier study (Layne, 1968), and it appears that this is not a common parasite of rabbits in this state. Ward (1934) did not give data on prevalence of *C. hepatica* in cottontails in Oklahoma.

All infections in *Rattus rattus* were recorded from the Archbold Biological Station located in Highlands Co., 8 miles S of Lake Placid. Approximately 600 specimens of 16 species of mammals collected on the 1050-acre area of the Station have been examined for *C. hepatica* infections. The general habitat types that have been sampled are described below.

Main grounds. A park-like area of lawns, clumps of shrubbery, scattered trees, and buildings and also including a nearby poultry yard and small vegetable garden.

Cultivated. An area of approximately 11 acres containing citrus

and other fruit trees; ornamental trees and shrubs; vegetable gardens; pineapple patches; weedy, fallow areas; and brushpiles.

Slash pine-turkey oak woodland. A relatively xeric habitat with large, rather widely spaced southern slash pine (*Pinus elliottii densa*) and a shrubby understory of turkey oaks (*Quercus laevis*) and other species. Grasses, chiefly wire grass (*Aristida*), and forbs are comparatively common. The soil is sandy and well drained.

Sand pine scrub. Mature stands of sand pine (*P. clausa*) ranging from a nearly closed to widely open canopy with a dense shrub layer of various oaks and other species and sparse herbaceous ground cover. The litter layer is generally well developed; the soil is sandy and well drained.

Scrubby flatwoods. Scattered southern slash pines with a dense shrub layer of many of the same species found in the previous association. The soils of sand pine scrub and scrubby flatwoods are generally similar as well.

Low flatwoods. This habitat is moister than the three preceding ones as a result of denser vegetation and more poorly drained soil. The dominant tree is southern slash pine, which often occurs in fairly dense stands with a thick understory of shrubs and palmetto. In other cases the shrubs and palmettos are few and widely dispersed, and there is a dense ground cover of grasses.

Bayhead. A low area of southern slash pine, loblolly bay (*Gordonia lasianthus*), sweetbay (*Magnolia virginiana*), and red bay (*Persea borbonia*) with an abundance of shrubs, ferns, forbs, and vines. The soil is rich in organic matter and poorly drained. This is the moistest environment of the series.

Nine (8.2 per cent) of 109 *Rattus* examined had grossly visible *C. hepatica* infections. Incidence of infections in different habitat types are given in Table 1. Infections of eight specimens were rated as to severity on the basis of criteria described by Layne (1968). Seven individuals had light infections and one a moderate infection. This suggests that *Rattus rattus* does not ordinarily become heavily infected with *Capillaria hepatica*, which agrees with findings for *R. norvegicus* (Herman, 1939; Luttermoser, 1936).

Comparative data on *Capillaria* infections in other species of mammals collected from the Archbold Station are also given in Table 1. Overall prevalence in each of these species is as follows: cotton rat (*Sigmodon hispidus*), 3.7 per cent; cotton mouse (*Peromyscus gossypinus*), 2.8 per cent; Florida mouse (*Peromyscus flori-*

TABLE 1

Incidence of *Capillaria hepatica* infections in four species of rodents in various habitats on the Archbold Biological Station, Highlands County, Florida.

	Rattus rattus			*Sigmodon hispidus*			*Peromyscus gossypinus*			*Peromyscus floridanus*		
Habitat	No. exam.	No. inf.	o/o inf.	No. exam.	No. inf.	o/o inf.	No. exam.	No. inf.	o/o inf.	No. exam.	No. inf.	o/o inf.
Main grounds	60	2	3.3	38	0	0	12	0	0			
Cultivated	26	1	3.8	24	2	8.3	2	0	0			
Slash pine-turkey oak	2	1	50.0	7	0	0	23	1	4.3	38	23	60.5
Sand pine scrub	5	3	60.0	2	0	0	29	2	6.9	22	15	68.2
Scrubby flatwoods	3	0	0				4	0	0	45	28	62.2
Low flatwoods				13	1	7.7	37	0	0			
Bayhead				1	0	0						
Unknown	13	2	15.4	22	1	4.5						

danus), 62.8 per cent. Two of three *Sigmodon* in which degree of infection was noted had light infections, and the third animal had a moderate infection. All infections recorded in *P. gossypinus* were classified as light. In contrast, of a total of 64 infections rated as to severity in *P. floridanus*, 12 were light; 34 moderate; and 18, heavy.

The occurrence of *Capillaria hepatica* in small mammals on the Archbold Station shows a strong association with relatively xeric scrub-like vegetation types (Table 1). This correlation has been previously noted in Florida by Layne and Griffo (1961) and Layne (1968). *P. floridanus*, which is closely confined to the slash pine-turkey oak, sand pine scrub, and scrubby flatwoods habitats, exhibits both the highest incidence and greatest intensity of infections. In contrast, the lower prevalence and severity of infections in the other three host species is associated with their broader ecological distribution on the Station. The restriction of the parasite to drier vegetative types on the Station may be even greater than the data indicate. Live trapping studies have shown that both *Rattus* and *P. gossypinus* are more mobile than *P. floridanus* and often move considerable distances from one habitat type to another. Thus, some of the infections found in these species in the non-typical habitats might actually have been acquired in the slash pine-turkey oak, scrub, or scrubby flatwoods associations. It is further possible that *C. hepatica* is not self maintaining in the less xeric habitats of the Station and that its occurrence and prevalence in these environments depends entirely upon movements of animals from the drier habitats.

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